Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for performing a remote test of a link between a first remote network device and a second remote network device by a measurement host comprising:

transmitting from the measurement host to the first remote network device an Internet Protocol Measurement Protocol (IPMP) packet requesting a measurement test of the link between the first remote network device and the second remote network device, wherein the measurement host is remote from both the first remote network device and the second remote network device;

receiving by the first remote network device said IPMP measurement test request packet, wherein the IPMP measurement test request packet indicates a type of test that is requested by the measurement host; and

performing said [[a]] measurement test of the link between the first remote network device and the second remote network device.

2. (Original) The method according to claim 1, wherein said performing the measurement test includes sending an IPMP echo request packet to the second remote network device by the first remote network device.

3. (Original) The method according to claim 1, further comprising sending a result of the measurement test to the measurement host from the first remote network device.

4. (Original) The method according to claim 1, wherein said performing the measurement test includes examining the IPMP measurement test request packet for information including specific details of the measurement test being requested and returning, if said one or more data elements are missing, said IPMP measurement test request packet to the measurement host with an error indicating missing required data elements.

5. (Original) The method according to claim 1, further comprising authenticating the IPMP measurement test request packet and returning, if the authentication fails, the IPMP measurement test request packet to the measurement host with an error indicating authentication failed.

6. (Original) The method according to claim 1, further comprising constructing an IPMP echo request packet for the second remote network device.

7. (Original) The method according to claim 6, wherein said constructing includes:

copying one or more data fields from a redirect options data section of the IPMP measurement test request packet into a header of the IPMP echo request packet; and

inserting by the first remote network device an identification data element identifying the first remote network device as a redirect measurement host.

8. (Original) The method according to claim 7, further comprising copying an identification data element identifying the measurement host in the IPMP measurement test request packet into the IPMP echo request packet.

9. (Previously Presented) The method according to claim 7, further comprising copying a source address and a port address from the IPMP measurement test request packet into an original sender data section element of the IPMP echo request packet.

10. (Currently Amended) A method for processing an <u>Internet Protocol Measurement Protocol</u> (IPMP<u>)</u> redirected echo reply packet, said method comprising:

receiving, by a ~~second~~ <u>first</u> remote network device, the IPMP redirected echo reply packet resulting from an IPMP redirected echo request packet sent by a first remote network device to the second remote network device after performing a measurement test on the link between the first remote network device and second remote network device, wherein the measurement test is performed in response to an IPMP measurement test request packet previously received by the first remote network device and sent from a measurement host<u>,</u> <u>wherein the IPMP measurement test request packet indicates a type of test that is requested by</u> <u>the measurement host</u>, wherein the measurement host is remote from both the first remote network device and the second remote network device;

~~receiving said IPMP redirected echo reply packet;~~ and

forwarding information included in the IPMP redirected echo reply packet to the measurement host.

11. (Original) The method according to claim 10, further comprising authenticating the IPMP redirected echo reply packet.

12. (Original) The method according to claim 11, wherein upon failing said authentication, the first remote network device zeros out any path records present and returns the IPMP redirected echo reply packet to the second remote network device with an error indicating failed authentication.

13. (Original) The method according to claim 10, further comprising checking the IPMP redirected echo reply packet for information indicative of an original sender, and if the original sender information is missing, returning the IPMP redirected echo reply packet to the second remote network device with an error indicating missing required data elements.

14. (Original) The method according to claim 10, further comprising creating an IPMP echo redirect reply packet.

15. (Previously Presented) The method according to claim 14, wherein said creating the IPMP echo redirect reply packet includes:

copying an original sender address and an original sender port address to a destination address field and a destination port address, respectively, of a header of the IPMP echo redirect reply packet.

16. (Original) The method according to claim 15, wherein said creating the IPMP echo redirect reply packet further includes setting an IPMP packet option Packet Type field to an echo redirect reply.

17. (Previously Presented) The method according to claim 15, wherein said creating the IPMP echo redirect reply packet further includes setting a time-to-live value based on an IPMP packet option reverse path time-to-live field.

18. (Currently Amended) A method for processing an <u>Internet Protocol Measurement Protocol</u> (IPMP) echo request packet comprising:

receiving [[an]] said IPMP echo request packet by a receiving device, said IPMP echo request packet including instructions for a recipient of the IPMP echo request packet, wherein said IPMP echo request packet includes one or more data fields from a redirect options data section of [[the]] a IPMP measurement test request packet into a header of the IPMP echo request packet and an identification data element, inserted by a sender device, identifying the sender device as a redirect measurement host;

creating an IPMP echo reply packet; and

including related information in the IPMP echo reply packet based on the instructions in the IPMP echo request packet.

19. (Previously Presented) The method according to claim 18, wherein the instructions include an instruction to insert a time stamp in the IPMP echo reply packet and the related information includes the time stamp.

20. (Currently Amended) The method according to claim 18, wherein said instructions include instructions to insert additional data indicating further details about [[the]] a time stamp.

21. (Currently Amended) The method according to claim 20, wherein <u>further</u> ~~additional~~ details include when the time stamp was made relative to arrival of the IPMP echo request packet.

22. (Currently Amended) The method according to claim 20, wherein [[said]] <u>further</u> ~~additional~~ details include an accuracy of a clock from which the time stamp originated.

23. (Currently Amended) The method according to claim 20, wherein [[said]] <u>further</u> ~~additional~~ details include a network address via which one can obtain <u>said</u> further details about the time stamp.

24. (Previously Presented) The method according to claim 18, wherein said instructions include instructions to insert a path record.

25. (Previously Presented) The method according to claim 18, wherein said instructions include instructions not to insert a path record.

26. (Currently Amended) The method according to claim 18, wherein said instructions include instructions to not insert a time stamp by [[the]]a network device.

27. (Previously Presented) The method according to claim 18, wherein said step of creating the IPMP echo reply packet further comprises:
exchanging an IP source address and an IP destination address.

28. (Previously Presented) The method according to claim 18, wherein said step of creating the IPMP echo reply packet further comprises inserting a path record.

29. (Previously Presented) The method according to claim 18, wherein said step of creating the IPMP echo reply packet further comprises either initiating a recording of a path or turning off recording of the path based on an instruction to toggle path recording included in said instructions in the IPMP echo request packet.

30. (Previously Presented) The method according to claim 18, wherein said step of creating the IPMP echo reply packet further comprises swapping a value of a faux source field and a faux destination field based on an instruction to swap faux ports included in the instructions in said IPMP echo request packet.

31. (Previously Presented) The method according to claim 18, wherein said step of creating the IPMP echo reply packet further comprises incrementing a packet type field.

32. (Previously Presented) The method according to claim 18, wherein said step of creating the IPMP echo reply packet further comprises setting a time-to-live value based on a reverse path time-to-live option.

33. (Previously Presented) The method according to claim 18, wherein said step of creating the IPMP echo reply packet further comprises scheduling the IPMP echo reply packet for forwarding taking account of a faux P-type field in the IPMP echo request packet instead of an IP protocol field in the IPMP echo request packet.

34. (Previously Presented) A method for testing a link between a first remote network device and a second remote network device by a measurement host device comprising:

　　　　receiving by the first remote network device an Internet Protocol Measurement Protocol (IPMP) packet, which includes an address of the measurement host device as a source address, an address of the first remote network device as a destination address, a flag indicating the IPMP packet is a redirection request packet, and a predetermined field with an address of the second remote network device as a redirection address to which the IPMP packet is to be redirected;

　　　　relabeling by the first remote network device, upon receipt of the IPMP packet and before forwarding the IPMP packet, the source address of the IPMP packet with the address of the first remote network device; and

　　　　relabeling by the first remote network device, upon receipt of the IPMP packet and before forwarding the IPMP packet, the destination address of the IPMP packet with the address of the second remote network device.

35. (Previously Presented) The method according to claim 34, further comprising forwarding the relabeled IPMP packet to the second remote network device.

36. (Previously Presented) The method according to claim 34, further comprising responding to the relabeled IPMP packet by the second remote network device by sending a reply IPMP packet to the first remote network device by exchanging the source address of the received IPMP packet and the destination address of the received IPMP packet in the reply IPMP packet.

37. (Previously Presented) The method according to claim 36, further comprising receiving the reply IPMP packet by the first remote network device and relabeling a destination address of the reply IPMP packet with the address of the measurement host device before forwarding the reply IPMP packet to the measurement host device.

38. (Currently Amended) An apparatus for performing a remote test of a link between a first remote network device and a second remote network device by a measurement host comprising:

a first processor disposed in the measurement host to couple to the first remote network device;

a first memory disposed in the measurement host and coupled to the first processor to store computer readable instructions causing the first processor to:

transmit to the first remote network device an Internet Protocol Measurement Protocol (IPMP) packet requesting a measurement test of the link between the first remote network device and the second remote network device;

a second processor disposed in the first remote network device to couple to the second remote network device and the measurement host; and

a second memory disposed in the first remote network device and coupled to the second processor to store computer readable instructions causing the second processor to:

receive said IPMP measurement test request packet, wherein the IPMP measurement test request packet indicates a type of test that is requested by the measurement host; and

perform [[a]] said measurement test of the link between the first remote network device and the second remote network device.

39. (Currently Amended) An apparatus for processing an <u>Internet Protocol Measurement Protocol (</u>IPMP<u>)</u> redirected echo reply packet, said apparatus comprising:

a processor to couple to [[the]] <u>a</u> second remote network device and to [[the]] <u>a</u> measurement host; and

a memory coupled to the processor to store computer readable instructions causing the processor to:

receive<u>, by a first remote network device,</u> the IPMP redirected echo reply packet resulting from an IPMP redirected echo request packet sent by a first remote network device to the second remote network device after performing a measurement test on the link between the first remote network device and second remote network device, wherein the measurement test is performed in response to an IPMP measurement test request packet previously received by the first remote network device and sent from [[a]] <u>the</u> measurement host<u>, wherein the IPMP measurement test request packet indicates a type of test that is requested by the measurement host</u>, wherein the measurement host is remote from both the first remote network device and the second remote network device;

~~receive said IPMP redirected echo reply packet;~~ and

forward information included in the IPMP redirected echo reply packet to the measurement host.

40. (Currently Amended) An apparatus for processing an <u>Internet Protocol Measurement</u> <u>Protocol (IPMP)</u> echo request packet comprising:

      a processor to couple to a network; and

      a memory coupled to the processor to store computer readable instructions causing the processor to:

      receiving [[an]] <u>said</u> IPMP echo request packet by a receiving device, said IPMP echo request packet including instructions for a recipient of the IPMP echo request packet, wherein said IPMP echo request packet includes one or more data fields from a redirect options data section of [[the]] <u>a</u> IPMP measurement test request packet into a header of the IPMP echo request packet and an identification data element, inserting by a sender device, identifying the sender device as a redirect measurement host.;

      create an IPMP echo reply packet; and

      include related information in the IPMP echo reply packet based on the instructions in the IPMP echo request packet.

41. (Currently Amended)   An apparatus for testing a link between a first remote network device
and a second remote network device by a measurement host device comprising:

a processor disposed in [[a]] the first remote network device;

a memory coupled to the processor to store computer readable instructions causing the processor
to:

      receive an Internet Protocol Measurement Protocol (IPMP) packet, which includes an
address of the measurement host device as a source address, an address of the first remote
network device as a destination address, a flag indicating the IPMP packet is a redirection
request packet, and a predetermined field with an address of the second remote network device
as a redirection address to which the IPMP packet is to be redirected;

      relabel, upon receipt of the IPMP packet and before forwarding the IPMP packet, the
source address of the IPMP packet with the address of the first remote network device; and

      relabel, upon receipt of the IPMP packet and before forwarding the IPMP packet, the
destination address of the IPMP packet with the address of the second remote network device.